

**Amendments to the Specification:**

Please amend the specification as follows:

(I) Please replace the paragraph starting at page 2, line 22, with the following:

“One feeder port 63 is provided on carrier plate 72, and a waveguide is formed from this feeder port 63 to each antenna. The waveguide therefore branches midway to form a plurality of feeder distribution paths 73. A selection structure for determining whether or not power is supplied to each sector is formed by means of MMIC (monolithic microwave integrated circuit)[[7 4]] 74 in each feeder distribution path 73 preceding the antenna of each sector. As a result, the operation of MMIC 74 in this sector antenna 71 selects the sector for supplying antenna radiation beam 64, whereby the radiation direction can be selected.”

(II) Please replace the heading at page 4, line 2, with the following:

~~“Disclosure of the Invention~~ Summary”

(III) Please replace the paragraphs starting at page 9, line 14 and ending at page 10, line 7, with the following:

“FIGs. 3A and 3B are schematic views of a feeder waveguide according to an embodiment of the present invention and a sector antenna that is provided with this feeder waveguide. The sector antenna of the present embodiment is a planar antenna in which feeder port 3 (FIG. 3A) is formed on one surface of dielectric board 11 and antenna elements are formed on the other surface; FIG. 3A being a perspective view as seen from the side of feeder surface 2 and FIG. 3B being a perspective view as seen from the side of antenna radiation surface 1.

In this sector antenna, a plurality of round elements is formed as antenna elements. These antenna elements are formed aligned in arrays in each of four regions, whereby the rectangular antenna radiation surface 1 can be split in two in both the vertical and horizontal directions. The antenna elements that are formed in each region make up antennas of one sector: 10a, 10b, 10c, and 10d (FIG. 3B). Each of sector antennas 10a, 10b, 10c, and 10d may be either a patch array antenna or a slot array antenna, and in either case, each antenna has directivity in a different direction, as shown schematically by antenna radiation beam 4 in

FIG. 3B. Accordingly, enabling the selective supply of transmission power to these antennas 10a, 10b, 10c, and 10d facilitates the aligning of the direction of the antennas, and further, enables application to point-to-multipoint communication.”

(III) Please replace the paragraphs starting at page 10, line 19 and ending at page 12, line 10, with the following:

“In the present embodiment, sector selection structures 8a, 8b, 8c, and 8d are provided at respective branch points, which are the portions of branching from main feeder line 5 toward branch feeder lines 6 and 7, as shown in FIG. 3A.

The explanation next regards the configuration of sector selection structures 8a, 8b, 8c, and 8d with reference to FIGs. 4A and 4B. FIG. 4A is a plan section taken along branch feeder line 6, and FIG. 4B is a vertical section.

In the present embodiment, sector selection structures 8a and 8b, as shown in FIG. 4B, are made up by cylindrical diodes that are connected to circuits (~~not shown~~) for selectively applying a reverse bias voltage or a forward bias voltage. These diodes are arranged such that the spacing between the walls of the waveguide tube that constitutes branch feeder line 6 is smaller than  $\lambda/2$ , where  $\lambda$  is the wavelength of the transmission signal inside the waveguide.

In the example that is shown in ~~FIGs. 4A and~~ FIG. 4B, a control voltage ( $V_c$ ) can be applied on the diode of sector selection structure. For example, a forward bias voltage is applied to the diode of sector selection structure 8b, whereby the diode enters a conductive state. As a result, this diode effectively functions as a conductor, i.e., assumes a state in which a cylindrical conductive via is formed inside the waveguide tube. In addition, because the spacing between this diode and the walls of the waveguide tube that make up branch feeder line 6 is less than  $\lambda/2$ , this diode effectively functions as a conductive wall that blocks the cross-section of the waveguide tube with respect to the transmission power in the waveguide. Accordingly, in the state that is shown in FIGs. 4A and 4B, a conductive wall is formed effectively in branch feeder line 6 at the starting position, i.e., at the branch point, of the waveguide that branches from the side of main feeder line 5 toward the left side of FIGs. 4A and 4B. In other words, this branch point is cut off.

In contrast, a reverse bias voltage is applied to the diode of sector selection structure 8a, whereby the diode is a high resistance, and this diode therefore exerts no influence upon

the transmission power that is transmitted inside the waveguide tube. In other words, the branch point from the side of main feeder line 5 toward the right side of FIGs. 4A and 4B is open. Accordingly, transmission power is selectively transmitted from the side of main feeder line 5 toward the right side of FIGs. 4A and 4B, is transmitted through sector antenna feeder line 9a, and conducted to antenna 10a. Because a conductive wall is formed effectively at the branch point by sector selection structure 8b in the portion from the side of main feeder line 5 toward the left side of FIGs. 4A and 4B as previously described, a bending ~~but perfect~~ waveguide tube is effectively formed in this portion, realizing a state that is equivalent to a case in which the branch waveguide directed toward the left side does not exist. As a result, there is substantially no leakage of transmission power to the branch waveguide that is directed from the side of main feeder line 5 toward the left side of FIGs. 4A and 4B and that passes to antenna 10b (FIG. 3B) by way of sector antenna feeder line 9b (FIG. 3A), and there is substantially no reflection from this branch point.”

(IV) Please replace the paragraphs starting at page 16, line 5 and ending at page 17, line 1, with the following:

“FIG. 6 shows an example of a configuration in which conductive plates 29a and 29b are caused to move vertically with respect to branch feeder line 6 which is branching from main feeder line 5, and thus be selectively inserted at branch points, the sector selection structure 28a side being in an open state with conductive plate 29a withdrawn from the interior of the waveguide tube, and the sector selection structure 28b side being in a cut-off state with conductive plate 29b inserted into the waveguide tube. Transmission power is thus selectively transmitted to only the side of sector selection structure 28a. These sector selection structures 28a and 28b can be configured by, for example, connecting metal plates to piezoelectric actuators as conductive plates 29a and 29b, and control can be realized by the selective application of voltage to the piezoelectric actuators.

FIG. 7 shows an example of a configuration in which conductive plates 39a and 39b have a rotational operation to selectively position conductive walls at positions that block the branch point of branch feeder line 6 and main feeder line 5; the sector selection structure 38a side being in the open state with conductive plate 39a rotated to a position along the tube wall of the waveguide tube, and the sector selection structure 38b side being in a cut-off state with

conductive plate 39b rotated to a position that is perpendicular to the waveguide tube. The transmission power is thus selectively transmitted only to the sector selection structure 38a side. Sector selection structures 38a and 38b of this configuration can be formed using, for example, the MEMS (Micro Electro-Mechanical System) technology.”

(V) Please replace the paragraph starting at page 14, line 6, with the following:

“The waveguide tubes may be a normal configuration that is enclosed by conductive walls so as to form paths having a rectangular cross-section, but may also be formed as a pseudo-waveguide tubes by conductive vias 50 and the metal layer that are provided in a dielectric board 11, as shown in FIG. 4C. In other words, waveguide tubes can be formed by the metal layer and via rows by forming conductive vias 50 in rows at a spacing of less than  $\lambda/2$  and then taking advantage of the effective functioning of these via rows in which the conductive vias 50 are aligned as continuous conductive walls with respect to the transmission power. This configuration is advantageous because waveguide tubes can be comparatively easily formed in planar dielectric board 11, whereby a feeder waveguide can be easily formed as a planar circuit. In addition, sector selection structures 8a, 8b, 8c, and 8d in the present embodiment are made up from cylindrical diodes, and these elements can also be easily mounted from the feeder port 3 side of dielectric board 11. Accordingly, the sector antenna and feeder waveguide of the present embodiment, particularly in the form in which pseudo-waveguide tubes are used, can be easily realized in an overall planar configuration and are extremely amenable to mass production.

(VI) Please add the following paragraph after page 9, line 1

“FIG. 4C is a schematic drawing of waveguide tubes in a dielectric board.”